

## The numeric values of rating scales: a comparison of their impact in mail surveys and telephone interviews

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**The Numeric Values of Rating Scales: A Comparison of  
their Impact in Mail Surveys and Telephone Interviews**

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**The Numeric Values of Rating Scales:  
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Telephone Interviews**

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Running head: Numeric Values

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### **Abstract**

Respondents of a mode experiment were asked to rate politicians along 11-point scales with different numeric values, ranging from "don't think very highly" (0 or -5) to "think very highly of this politician" (10 or +5). As predicted, all politicians received more favorable ratings along the -5 to +5 than along the 0 to 10 scale. Moreover, this effect was independent of the mode of data collection used, demonstrating that the impact of numeric values does not depend on their visual presentation.

**The Numeric Values of Rating Scales:  
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Schwarz, Knäuper, Hippler, Noelle-Neumann, and Clark (1991) observed that the numeric values provided as part of a rating scale may influence respondents' interpretation of the endpoint labels, resulting in pronounced differences in the obtained responses. In one of their studies, German adults were asked to rate their success in life along an 11-point rating scale, with the endpoints labeled "not at all successful" and "extremely successful". When the numeric values ranged from 0 ("not at all successful") to 10 ("extremely successful"), 34 percent of the representative sample endorsed values between 0 and 5. However, only 13 percent endorsed formally equivalent values between -5 and 0, when the scale ranged from -5 ("not at all successful") to +5 ("extremely successful"). Subsequent experiments indicated that this difference reflected differential interpretations of the term "not at all successful." When the label was combined with the numeric value 0, respondents interpreted it to reflect the absence of success. However, when the same label was combined with the numeric value -5, they interpreted it to reflect the presence of failure.

As this example illustrates, the specific numeric values presented as part of a rating scale may change the meaning of the scale's verbal endpoints, essentially resulting in responses to different questions. In the present paper, we provide a conceptual replication of this finding in a different content domain and compare the relative strength of the impact of numeric values under telephone and mail survey conditions. Specifically, we asked German respondents to evaluate politicians along 11-point rating scales, running from 0 (or -5) = "don't think very highly of this politician" to 10 (or +5) = "think very highly of this

politician". We assume that the verbal label "don't think very highly of this politician" is interpreted as reflecting the absence of a positive evaluation if combined with the numeric value 0, but the presence of an explicitly negative evaluation if combined with the numeric value -5. Accordingly, the mean response should be more favorable if provided along a -5 to +5, rather than a 0 to 10 scale.

The impact of the mode of data collection on this effect, however, is difficult to predict (for a detailed theoretical discussion of cognitive aspects of different administration modes see Schwarz, Strack, Hippler, & Bishop, 1991). On the one hand, respondents may be more likely to pay attention to the numerical values of a rating scale if they are shown on a show card or in a self-administered questionnaire. On the other hand, respondents have to interpret the meaning of the endpoint labels under either mode and offering specific numeric values along with the label in a telephone interview may be sufficient. At present, however, the evidence bearing on the impact of numeric values is limited to conditions where the scales were presented on show cards or as part of a self-administered questionnaire. Accordingly, we explored possible mode differences by comparing the impact of the numeric values of a rating scale in a mail and telephone survey.

### Method

The data are drawn from a larger experimental survey conducted with a systematic random sample of 412 adults (18 years or older), selected from the telephone directories for Mannheim and Heidelberg, Germany, in November and December 1991. 615 respondents were initially contacted on the phone and asked whether they were willing to participate in a short survey; 466 (76%) agreed with this request and were randomly assigned to conditions. Of the 238 assigned to telephone interview conditions, 229 (96.2%) completed

the interview during the same phone call. The 228 respondents assigned to mail survey conditions were informed that a questionnaire would be mailed to them. The mail survey followed the Total-Design-Method (Dillman, 1978) and 183 (80.2%) completed questionnaires were received. Thus, the initial telephone screening procedure allowed us to avoid large differences in the response rates.

The crucial questions asked for evaluations of six German politicians (Kohl, Lambsdorff, Engholm Genscher, Klose, Fischer) along a scale from -5 to +5, or from 0 to 10. Under telephone conditions, the question read to respondents was:

"Please imagine a thermometer that runs from minus five to plus five, with a zero in between (vs. that runs from zero to ten). Please use this thermometer to tell us how you feel about some politicians. Plus five (ten) means that you think very highly of them, and minus five (0) means that you don't think very highly of them. How do you feel about (name)? "

Under mail survey conditions, the respective thermometer was printed as part of the questionnaire and respondents recorded their rating next to the politician's name. For the analyses, the responses along both scales were coded from 0 to 10.

### Results and Discussion

Averaging over the evaluations of all six targets, respondents endorsed values that implied a more favorable opinion along the minus five to plus five ( $M = 5.6$ ), than along the zero to ten scales ( $M = 4.9$ ),  $F(2,353) = 18.76$ ,  $p < .0001$ . This pattern was obtained for all politicians assessed, with differences of up to 1.3 scale points. However, the impact of



numeric values was virtually unaffected by the administration mode used,  $F < 1$  for the interaction of numeric values and administration mode. Under mail and telephone interview conditions, respectively, the mean ratings were  $\bar{M} = 5.5$  and  $5.7$  along the  $+5/-5$  scales, and  $\bar{M} = 5.0$  and  $5.0$  along the  $0/10$  scales.

How powerful these effects are, becomes particularly apparent when we examine the percentage of respondents who reported values below the respective mid-point of the respective scale. Across both modes, 29.3 percent reported a mean approval rating below the midpoint along the  $-5/+5$  scales, whereas 40.2 percent did so along the  $0/10$  scales, resulting in a difference of 11.5 percent.

In summary, the present findings replicate the phenomenon observed by Schwarz et al. (1991) in a different content domain and across two administration modes. As previously demonstrated (see Schwarz, 1994, for a more theoretical discussion), respondents use formal features of the questionnaire to determine the exact meaning of a question. Hence, combining a verbal label with a negative numeric value suggests a more negative interpretation of the verbal scale anchor and results in more positive responses along the scale. Whereas self-administered questionnaire conditions generally provide more opportunity to draw on formal features of the questionnaire, the present findings indicate that the numeric values do not need to be presented in a visual format to receive sufficient attention. Rather, the numeric values of rating scales seem as likely to affect respondents' interpretation of the question under telephone interview conditions as they are under self-administered questionnaire or show card conditions.

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